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ABSTRACT

In a study to seek an alternative methodological approach to collective bargaining research, an interaction model based upon a systems approach to small group communication was used to observe, record, and quantify the communication behavior of teacher/school board negotiators. Specifically, the study sought to determine whether the interaction among groups that reached consensus was characterized by more positive responses than was the interaction among groups that did not reach agreement, and to determine whether predictable phases of interaction emerged among groups that reached consensus but not among those groups that did not. The results indicated that interaction among bargaining groups that reached consensus was characteristically positive; interaction among groups that failed to do so was characteristically negative. No conclusions were reached about phase movements in bargaining. The findings suggest that a bargaining research model that views negotiation as a form of small group problem solving and focuses on communication interaction can provide insight into bargaining behavior. (FL)

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Interaction Analysis in Collective Bargaining: An Alternative Approach to the Prediction of Negotiated Outcomes

Abstract

Communication interaction has been ingnored or treated as an extraneous variable in most bargaining research. The basic assumption underlying this study is that communication interaction is the essence of bargaining. The theoretical rationale underlying this study established communication interaction as the dependent variable. An interaction model based upon a systems approach to small group communication behavior was used to observe, record, and quantify communication by means of a category system. The hypothesized difference in terms of communication interaction between consensus and impasse sessions was supported. The results of the study suggest that interaction analysis can be used to predict negotiation outcomes. A bargaining research model that views negotiations as a form of small group problem-solving and focuses on communication interaction appears to provide insight into bargaining behavior.

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Interaction Analysis in Collective Bargaining: An Alternative Approach to the Prediction of Negotiated Outcomes

The passage of the National Labor Relations Act in 1935, which guaranteed the right of laborers to bargain collectively, has given a new meaning and impetus to the word "negotiation." Since that time, collective bargaining has been a significant economic and social factor in the United States. Spurred by the impact of this legislation, economists during the past four decades have generated much theory and research designed to explain bargaining strategy and predict outcomes. Their studies, however, have yielded inconclusive and often contradictory results. A possible explanation is that bargaining theory has largely ignored communication, and most research has treated it as an extraneous variable.

The fundamental assumption underlying this study is that communication is the essence of bargaining; to ignore it is to deny the essence of bargaining. At present the best theoretical approach to examine the bargaining context is from the perspective of the social behavioral scientist, viewing bargaining as a form of small group problem-solving behavior. Ellis and Fisher (1975) state that "it is probably more useful to study conflict as an integral part of the communication process" (p 196). In order to understand the communication process in collective bargaining, the researcher should analyze the communication acts, interacts, and patterns within the negotiation setting (Fisher & Hawes, 1971). It is the purpose

of this study to examine the communication interaction components and patterns among negotiators and their influence on the outcome of the negotiation resolution.

Bargaining theorists have attempted to predict negotiation outcomes, but their success has been limited and inconsistent. To date, collective bargaining has benefited very little from the economists' bargaining theory and research. Numerous variables, including aspirations, strategies, payoffs, roles, personality traits, and information flow, have been found to significantly affect results of negotiation, but bargaining theory has been unable to consistently explain the relationship between these variables. Results of studies have not been generalized to negotiations in the form of principles that will enable negotiators to bargain more efficiently and effectively.

RATIONALE FOR HYPOTHESES

Previous bargaining research from the perspective of bargaining theory usually identifies as dependent measures a quantification of cooperative and competitive behavior, operationalized as choices in a bargaining game involving two players. While these studies provide little insight into communication during bargaining, they do permit several qualified conclusions concerning channels, content, and amount of communication.

There is some evidence (Smith, 1966, 1969; Ellis, 1965; Bliese, 1971) that unrestricted communication situations in which all nonverbal and verbal channels are available induce more cooperative behavior than do restricted communication situations in which the use of one or more of the communication channels is not permitted. That increased cooperative game behavior is more likely to result when verbal messages

are permitted than when they are not permitted has been demonstrated by numerous studies (Deutsch, 1958, 1960; Loomis, 1959; Deutsch & Krauss, 1962; Evans, 1964; Shure, Meeker, & Hansford, 1965, Radlow & Weidner, 1966; Daniels, 1967; Terhune, 1968; Swingle & Santi, 1972). In a corollary study, Wichman (1970) found that game behavior of subjects is more cooperative when use of nonverbal communication channels is permitted than when nonverbal channels are restricted or unavailable.

The concept that restriction of communication reduces cooperative behavior is not universally supported, however. Siegel and Fouraker (1960), by arguing that broadened communication opportunity would result in increased interpersonal conflict and fewer mutually satisfactory settlements, justified restriction of communication in their research design. Other studies (Swingle & Santi, 1972; Sherif, Harvey, White, Hood, & C. Sherif, 1961; Deutsch & Krauss, 1962) indicate that availability of communication channels does not necessarily result in increased cooperative behavior; subjects often chose not to use the channels (Bartos, 1970). Vroom, Grant, and Cotten (1959) found that verbal communication during the initial phase (generation) of decision-making by small groups is dysfunctional, casting further doubt that unrestricted communication increases cooperation.

The bargaining theory research provides typically contradictory answers to the question of whether communication promotes or hinders cooperative behavior. It appears safe to conclude only that the mere presence of communication does not resolve conflict. This conclusion is supported by several studies that investigated decision-making in small groups which found that frequency and length of messages are unrelated to resolution of conflict (Vroom, Grant, & Cotton,

1969; Bower, 1965; Wood, 1973).

Other studies indicate that when available verbal channels are not used effectively, there exists a situation characterized by a low level of trust and a high level of competition (Loomis, 1959; Shure, Meeker, & Hansford, 1965; Deutsch, 1958; Deutsch & Krauss, 1962; Pilisuk, Winter, Chapman & Haas, 1967; Terhune, 1968; Wallace & Rothaus, 1969). In studies in which steps are taken to insure or promote trust between the players (negotiators), usually through worded messages, cooperative behavior increased (Evans, 1964; Krauss & Deutsch, 1966; Swensson, 1967; Terhune, 1968). Congruence between players' (negotiators') actions and their verbal messages most effectively created a situation of trust leading to cooperative behavior (Gahagan & Tedeschi, 1968; Horai & Tedeschi, 1969).

The above research led the present researchers to conclude that the critical question is not <u>whether</u> subjects communicated, but <u>what</u> they communicated. Several bargaining game studies attempted to control content of communication. As verbal messages became increasingly explicit in terms of content, they became increasingly effective in inducing cooperative behavior (Loomis, 1959; Evans, 1964; Shure, Meeker, & Hansford, 1965; Radlow & Weidner, 1966, Daniels, 1967; Swingle & Santi, 1972; Terhune, 1968). Specific messages, especially when they are fair and honest, which contain appeals for cooperation in the form of proposed compromises and rationale for cooperation are effective in inducing cooperation (Krauss & Deutsch, 1966; Ellis, 1965; Dorris, 1972; Johnson, 1971).

The studies cited above provide evidence suggesting that content of communication is related to cooperative behavior in bargaining

groups, but inadequate conceptualization and operationalization of communication have prevented the research from yielding any meaningful insight into the interaction as a process. Research generated from a game theoretic model is based on a restricted concept of communication. It is conceptualized as a static message, usually operationalized as the passing of notes, displaying of signals, use of telephone linkage, and occasionally as face-to-face discussion. Limiting communication to single one-way messages denies the fundamental process nature of communication, which involves a continuous and simultaneous exchange of both verbal and nonverbal messages between the interactants. To restrict communication to isolated static messages (as most of the studies reviewed above have done) is to create an artificial communication environment that precludes natural interaction patterns. The view of communication as a static phenomenon further ignores the possibility that communicative acts function differently during different phases of decision-making or problem solving, as suggested by research in small group behavior.

A proliferation of conflict models in recent years has not produced significant research because they continue to be based on traditional bargaining theory. The problem has been recognized by other theorists.

> Inadequate conceptualization and theorizing have had important consequences. First, generalization across disciplinary or subject-matter lines has been slow to develop and, where it does appear, is often implicit. Second, it has been difficult to link propositions systematically. Third, research has not always been guided by hypotheses of acceptable power and significance. Fourth, no well-rounded body of case materials based on comparative types, unifying concepts, and general hypotheses has developed. (Mack & Snyder, 1957, p 213).

Johnson (1974) reached a similar conclusion:

> Without adequate conceptualization it is difficult to build theoretical models to organize and stimulate research. Concepts determine the behavior field observed, affecting the principles derived from the observations, which in turn affect the hypotheses, laws, and theories constructed. Without clarification of the concept 'communication,' no theory of effective communication in conflict situations can be built (p 77).

Ellis and Fisher (1975) were motivated by the same observation:

> A high volume of research activity has apparently contributed little meaningful knowledge . . . The literature exemplifies one of the strongest criticisms one may levy against conflict research--that is, a general lack of cumulative and systematic development (p 195).

The failure of conflict theory, game theory, and bargaining models to adequately account for communication in negotiations has been attributed to two fundamental shortcomings: (1) The selection of a relatively closed conception of conflict as the basic theoretical model. (2) Inadequate conceptualization and operationalization of communication. Consistent with the definition of bargaining as essentially communicative behavior and of collective bargaining as a form of small group problem solving, we propose to examine a systems approach to small group interaction as an alternative to game theory.

Systems Approach

A systems approach to the study of communication interaction within a small group is advocated by Fisher and Hawes (1971). Their approach does not focus on a single isolated variable in a controlled experiment (as nearly all bargaining research has done), but observes instead all the components of the system as they function in their

natural environment, thus preserving the interdependence of the components of the system. Systems theory, as it applies to small group behavior, advocates a holistic treatment that studies the structure, function, and behavior of the entire group. Given the virtual impossibility of separately accounting for all the many variables at work within the bargaining process, a systems approach appears to be an attractive alternative.

Systems are classified by Fisher and Hawes (1971) as either "open" or "closed." In an open system, "the arrangement of components is perpetually changing as they affect and are affected by environmental variables" (p 446). In a closed system, the initial arrangement of components determines the ultimate stability of its structure, function, and behavior. Such a system, of which game theory is the proto-type, is necessarily static and does not allow for the dynamic process nature of communication:

> Communication, thought of as verbal and nonverbal interaction, plays an insignificant role in closed conflict systems. In fact, many negotiation studies generated from the game theoretic model control out unconstrained verbal behavior as a confounding variable. The game theory model seems ill-fitted to describe the role of communication in conflict particularly when the notion of communication as process is to be emphasized (Hawes & Smith, 1973, p 428).

Fisher and Hawes (1971) have proposed an Interact System Model (ISM) that is designed specifically to serve as a research model to explore small group communication behavior. This model is based upon an open concept of general systems theory, viewing communication as a process that constrains the behavior of individuals within a small group context. The ISM is also based upon the assumption that

the structure, function, and behavior of the system (small group) is defined by the various patterns of communication units. Unlike many other models, it is not directly concerned with individuals nor with their responses to measures of cognitive and affective variables. It is concerned instead with observable verbal and nonverbal behavior.

Components of the ISM are codable units of verbal and nonverbal communication. Relationships among components are defined by the formal consistency of recurring patterns of communication units (Fisher & Hawes, 1971). The smallest codable unit of communication is termed an "act." Fisher and Hawes define an act as a communication unit emitted by one individual. It is operationalized by Ellis and Fisher (1975) as "one instance of task function behavior on a decision proposal regardless of length. An act terminates when it is interrupted by another individual's act or when category functions are crossed" (p 198).

A larger unit of communication is termed an "interact." It is defined as a contiguous pair of acts--the antecedent act and the subsequent act together comprise a single interact. Interacts are also units of analysis in the ISM.

Fisher and Hawes (1971) also explain how the ISM should be operationalized as a research model:

> Operationally, the investigator codes a transcript of a small group discussion and conducts both a static and contiguity analysis of the data. Static analysis determines the frequencies of different acts during any given time phase. Contiguity analysis consists of tallying the frequencies of interacts--antecedent and subsequent acts--during the same time phase. A time phase, then, may be characterized by recurring patterns of both acts and interacts (p 449).

The basic procedure of the ISM is to identify acts and interacts and to determine their arrangements and recurring patterns across time phases. These patterns help to define the structure, functions, and behavior of the system at any given time. The advantage of the ISM is that, by focusing on process variables and identifying communication as a dependent variable, it considers process as the fundamental dimension of a theory of small groups. However, it must be operationalized through the use of a category system, or coding system, by which to conduct the interaction analysis.

Interaction Process Analysis

The most widely used and best validated category system for the purpose of interaction analysis, as required by the Fisher and Hawes ISM model, was developed by Robert F. Bales (1950). His Interaction Process Analysis (IPA) remains a significant contribution to research in small group problem-solving behavior. This useful twelve-category system for observing small group behavior is comprehensive, easy to use, and well validated by research. Through the use of this system, which identifies interaction according to positive and negative categories as well as task-related and social-emotional behavior, Bales theorizes about the equilibrious nature of small groups and typical interaction phases through which problem-solving groups progress. Research to date utilizing the ISM model has employed category systems that concentrate only on task related behavior while largely ignoring social-emotional interaction. Thus the equilibrious nature of phases as Bales describes them is not accounted for.

A number of studies support the concept that communication during small group problem-solving can be divided into phases (Bales, 1950,

1966; Bales & Strodtbeck, 1968; Landsberger, 1955; Hare, 1962; Vroom, Grant, & Cotton, 1969; Wood, 1973; McGrath & Julian, 1963; Bower, 1965; Fisher, 1970; Ellis & Fisher, 1975; Tuckman, 1965). There are usually either three (Bales & Strodtbeck, Landsberger, Wood, Bower, Ellis & Fisher) or four phases (McGrath & Julian, Fisher, Tuckman). The studies use various labels and methods of identifying the phases (according to time segments or according to varying interaction patterns), but the descriptions of the interaction during each phase reveal a close similarity to that of the three phases identified by Bales.

The Bales studies, generally supported by other small group research, provide a category system for use in interaction analysis in the operationalization of the Fisher and Hawes ISM model. The typical phases through which successful problem-solving groups move provide a theoretical bases for testing an alternative approach to research in bargaining behavior.

HYPOTHESES

The review of literature reveals that problem-solving groups typically progress through several phases en route to resolution, and that these phases are characterized by identifiable patterns of interaction.

The research reviewed, however, typically involved experimental laboratory groups that were required to reach a decision or solve a problem, frequently within a specified period of time. The extent to which the findings of these studies will generalize to real-world bargaining groups that meet for unspecified time periods, for an unspecified number of meetings in a series, and that may or may not

reach a decision or solve a problem, frequently within a specified period of time. The extent to which the findings of these studies will generalize to real-world bargaining groups that meet for unspecified time periods, for an unspecified number of meetings in a series, and that may or may not reach a decision at the conclusion of the meetings, is the fundamental question underlying this investigation. The study also seeks to identify elements and patterns of interaction that are likely to lead to successful negotiations (resolution of conflict). Specifically, this study proposes to compare and contrast interaction components and patterns between negotiating groups that reach consensus and negotiating groups that fail to reach agreement. In the larger sense, this investigation attempts to demonstrate that the ISM model utilizing an open system of conflict research is a better approach to bargaining research than the closed system of game theory.

The specific hypotheses tested in this study are:

H_1: Social emotional interaction (agrees or disagrees, dramatizes or shows tension, seems friendly or unfriendly) will differ between bargaining groups that reach consensus and bargaining groups that fail to reach agreement.

H_{1a}: The three positive social-emotional categories (seems friendly, dramatizes, and agrees) will comprise a greater proportion of all interactions among bargaining groups that reach consensus than among bargaining groups that fail to reach agreement.

H_{1b}: The three negative social-emotional categories (seems unfriendly, shows tension, and disagrees) will comprise

a greater proportion of all interactions among bargaining that fail to reach agreement than among bargaining groups that reach consensus.

H_2: Phases of interaction (orientation, evaluation, control) will emerge among both groups, but they will be found to a greater degree among bargaining groups that reach consensus than among bargaining groups that fail to reach agreement.

H_{2a}: The task orientation categories (giving and asking for information) will peak during the first phase and progressively decrease thereafter among both groups (those reaching consensus and those failing to reach agreement).

H_{2b}: The task evaluation categories (giving and asking for opinions) will peak during the middle phase among groups that reach consensus. The task evaluation categories will not peak during the middle phase among groups that fail to reach agreement.

H_{2c}: The task control categories (giving and asking for suggestions) will progressively increase toward a peak during the last phase among both groups (those reaching consensus and those failing to reach agreement).

H_{2d}: The positive social-emotional categories (showing friendliness, dramatization, and agreement) will progressively increase toward a peak during the last phase among groups that reach consensus. The positive social emotional categories will not progressively increase toward a peak during the last phase among groups that fail to reach agreement.

H_{2e}: The negative social-emotional categories (showing unfriendli-

> ness, tension, and disagreement) will progressively increase toward a peak during the last phase among both groups (those reaching consensus and those failing to reach agreement).[1]

METHOD

Bargaining studies have relied heavily on game behavior or experimentally created, simulated bargaining settings in college classrooms. Motivation for subjects was usually provided in the form of minor payoffs at the conclusion of the game or encounter, or no motivation was provided at all. Because negotiators in real-world collective bargaining deal with issues of great personal importance to them, it is questionable whether a collective bargaining environment can be adequately simulated in an artificial classroom bargaining game with randomly selected subjects. Collective bargaining frequently occurs in a highly charged atmosphere. Negotiators are usually selected on the basis of their personality and high degree of commitment. Bartos (1967) concluded his experimental study of bargaining behavior with this statement:

> It does not seem profitable to conduct simple experiments with subjects who are not professional negotiators and generalize from their behavior to that of professionals, if the most important ingredient, the code (of communication behavior), is missing from the experiments (p 495).

While field studies are frequently criticized for their lack of scientific rigor with resultant loss of internal validity, they are frequently superior to controlled laboratory studies in terms of external validity. Field study as a method of research is strongly defended by some authorities (Katz, 1953; Clevenger, 1969; Kerlinger, 1965), but Redding (1970) provides the best justification for the

selection of a field study for this investigation:

> The kinds of communication variables most urgently in need of study are probably the kinds most difficult to capture in any setting perceived by the subjects to be nonrealistic. However, it is also a fact of common observation that the most meaningful acts of human communication are embedded in a complex maze of other interacting factors; in other words, the systems approach is highly recommended to communication researchers. Insofar as conventional laboratory experimentation fails to deal appropriately with all these attributes of human communication behavior, nonlaboratory approaches have been strongly urged by many recent researchers (p 150).

The open system advocated by Fisher and Hawes, along with the inherently descriptive nature of interaction analysis, seem to enhance its suitability to less controlled (and more natural) investigation. For these reasons, the field study approach was selected for this investigation. It is a means of eliminating the confounding effects of using simulation or games in examining communication interaction in collective bargaining.

Procedures

The selection of bargaining groups was narrowed to teacher-school board negotiations because these groups expressed the most willingness to cooperate with the study. Arrangements were made with superintendents, presidents of school boards, and presidents of education associations to tape record negotiation meetings of five separate bargaining groups. In all cases, superintendents were asked to handle the mechanics of taping because they are normally present at teacher-school board negotiations to serve as a neutral information source and to record proceedings. The presence of non-bargaining individuals whose functions are limited to the mechanics of taping might restrict the interaction behavior of the bargainers.

Audio taping was selected as the procedure for recording interaction. The only feasible alternative is video-taping, which would record nonverbal communication, but would require special equipment and operators and would disrupt the meetings, thus minimizing some of the advantages of the field setting. Tape recordings did preserve vital vocal aspects of nonverbal communication (paralanguage) and permitted repeated playbacks, which proved extremely valuable during the subsequent interaction analysis of the tapes.

Tapes of thirty-two separate sessions spanning a three-year period, plus transcripts from three additional meetings, were collected. From this total, ten (eight tapes and two transcripts) were selected for use in this study. The final selection of bargaining sessions for purposes of interaction analysis was based on three primary criteria:

(1) Quality of audio recordings. Tapes that were not clearly audible could not be used. This criterion eliminated eleven of the tapes and precluded interaction analysis of an entire series of bargaining sessions.

(2) Productiveness of the meeting. Sessions in which a decision was reached, either agreement or impasse, were selected over purely informational meetings. The final selection contained five meetings in which consensus was reached on at least one item of negotiation and five meetings in which impasse was either declared or implied.

(3) Size and geographical location of school districts. An attempt was made to select a representative cross section geographically, but especially according to size. Two tapes were from eastern

Kansas, two from eastern Nebraska, and six from central Nebraska. Two tapes were from a large metropolitan district (one agreement and one impasse), five from a Class A non-metropolitan school (three agreement and two impasse), and three from small rural districts (one agreement and two impasse).

Selection of bargaining sessions according to whether agreement was reached or whether impasse was declared is the critical criterion; it comprises the manipulation of the independent variable in this study.

An interaction analysis based upon the Fisher-Hawes ISM requires the use of a category system by which to code and quantify the communication acts. Fisher and Hawes do not recommend a specific category system for use with their model; they advocate that the researcher develop his own category system derived from the data being analyzed. Research based upon the ISM (Fisher, 1970; Ellis & Fisher, 1975) that has attempted to derive a category system from the data has concluded that the category system used was unsatisfactory and needed to be revised.

The Bales IPA category system was selected for use in this study because it was specifically designed to analyze interactions among problem-solving groups, includes both task-related and social-emotional dimensions, has been highly refined and extensively used, and is practical and usable. Bales (1970) has written complete explanations of his system along with detailed instructions for coding. Rater reliability with his system has been consistently high (Borgatta & Bales, 1953; Blake, Mouton, & Fruchter, 1954), and his system permits a comparatively sophisticated interpretation of results. In addition

to the numerous studies utilizing this system against which results might be compared, the categories are so arrayed and paired as to allow analysis of communication acts along several dimensions--social-emotional or task-related, positive or negative, interrogative, expressive, instrumental, or adaptive. The high level of refinement of this system allows this analysis to be performed after coding, thus simplifying the task of the coder.

Coding was performed by three raters, including one of the authors and two additional raters who were not informed of the purpose of the study. The two additional raters, both high school speech/English teachers who hold master's degrees, were trained in the use of the Bales category system. Training consisted of a thorough explanation by these researchers of the system and how it is used, together with practice in actually coding interaction from a manuscript and finally from audio recordings. Training continued until all three raters were able to code 90 percent correct on coding samples selected from Bales (1950). There was a .78 correlation among the three raters on additional manuscript coding samples.

All ten recorded bargaining sessions were coded individually by each of the three raters on scoring cards according to Bales' (1970) twelve-category system. After the entire session was coded, score sheets from each rater were compared to those of the other two raters. In cases of disagreement, the category selected by two of the three raters was retained. In the rare cases of total disagreement, the act in question was disregarded.

Scoring cards were identified according to bargaining group, date of session, and rater. Time segments--initial phase, middle

phase, and final phase--were later designated according to number of coded acts (one third of the total for each session were assigned to each phase). Each act was recorded in chronological sequence across the card (40 acts per card) to permit analysis according to time phases. Scoring cards from each bargaining session were finally divided into agreement and impasse according to the outcome of the meeting.

Statistical Analysis

The first level of analysis identified by the ISM is a frequency count for each category of interaction as coded and recorded on the scoring cards by the three raters. All acts are compiled by categories, totaled, and reduced to percentages to determine the proportion of acts in each category. The second level of analysis examines these frequencies across time phases after they are reduced to percentages. The arrays of frequency counts were further broken down according to bargaining group. Frequency counts, reduced to percentages, were arrayed separately for the groups reaching consensus and for the groups that failed to reach agreement--the two levels of the independent variable in this study.

All frequencies were reduced to percentages to offset the lack of control over length and number of meetings by each of the groups. Some of the groups met longer and more frequently than others, with a resultant disparity in the frequency of interaction. This disparity across groups was offset by converting all category frequencies to percentages of total interactions.

Because two independent groups are used in this study and because the measurement used was a nominal scaling according to frequencies

in discrete categories, the chi-square was selected as the appropriate statistical test to use with the data collected. The Table of Critical Values of Chi-Square (Siegel, 1956) was used to test the significance of differences between the independent variables.

The two sub-hypotheses under the first basic hypothesis, which predicted specifically how the two independent groups would differ category by category, can be verified by percentage comparisons of the two groups. The significance of the differences was tested through an orthogonal contrasting procedure developed by Bresnahan and Shapiro (1966) and explicated by Friedrich (1967). This procedure is essentially a nonparametric analysis of variance which permits the specific hypotheses to be statistically tested by partitioning chi-square contingency tables for the purpose of making additional comparisons of cells within a matrix. It also permits an analysis of the effects of agreement on task-related categories.

The second basic hypothesis was derived from and corresponds to the conclusions of the classic Bales and Strodtbeck study (1951) of interaction phases in small group decision-making. Both the procedure and the conclusions of this laboratory study were reaffirmed in a field setting using bargaining groups (Landsberger, 1955). The present study attempted to further extend the findings of these studies and therefore used the same procedure to test the hypotheses.

The basic hypothesis, that phase of interaction would emerge across time segments among both independent groups, but that they would be stronger among groups that reached consensus, was submitted to a modified chi-square test described by Bales and Strodtbeck (1951). This method, which was Fisher's Z-transformation of correlation coeffi-

cients, permits a simple calculation of chi-square values for groups of meetings by determining the number of transpositions from the hypothesized phases (sub-hypotheses under H_2) of each separate meeting.

The specific sub-hypotheses were tested by inspecting each of the ten bargaining sessions to determine the extent to which they deviated from the hypothesized phase movement. The number of transpositions required to convert the observed phase movement in each case to the hypothesized movement was calculated in accordance with the method suggested by Bales and Strodtbeck (1951). The level of significance is set at three or fewer transpositions for each meeting in accordance with transformations calculated from Kendall's rank correlation coefficient.

RESULTS

The study sought to test an alternative to the game theoretic approach to bargaining, using the ISM model to provide insight into communication behavior of bargainers. It investigated two basic questions: (1) Is the interaction among bargaining groups that reach consensus characterized by more positve responses than the interaction among bargaining groups that fail to reach agreement? (2) Do predictable phases of interaction emerge among bargaining groups that reach consensus, but not among bargaining groups that fail to reach agreement?

The first general hypothesis (H_1) predicted a difference in the social-emotional interaction among bargaining groups that reached consensus and groups that failed to reach agreement. It was further hypothesized that positive responses would comprise a greater proportion of interaction among bargaining groups that reached consensus (H_{1a}), while negative responses would comprise a greater proportion

among groups that failed to reach agreement (H_{1b}). Positive responses were operationalized in this study as expressions of friendliness, dramatization, and agreement (categories 1-3); negative responses were operationalized as expressions of unfriendliness, tension, or disagreement (categories 10-12). No significant differences were predicted for the task-related categories (4-9), as Bales' studies showed no consistent directional changes in these categories.

"Table 1 about here"

Table 1 reveals that, as predicted, groups reaching consensus recorded a higher percentage of acts in all positive social-emotional categories (1-3) while groups reaching impasse recorded a higher percentage of acts in all negative social-emotional categories (10-12). Comparison of results shown in Table 1 with the Bales table (1966, p 447) shows directional differences in only two categories--"asks for information" and "asks for opinion." The differences were found to be significant ($\chi^2 = 247.53$, $df = 11$, $p < .001$), thus providing support for Hypothesis 1.

"Table 2 about here"

The chi-square computation reveals only that the interaction differences between consensus groups and impasse groups is significant, but it does not identify specific categories in which the greatest difference is found. In order to locate more precisely where the discrepancies occurred, the contingency tables (see Table 2) were partitioned through the use of an orthogonal contrasting procedure explicated by Friedrich (1967). This statistical procedure allows the researchers to lay out the partitions (in this case, categories) in various combinations so that the separate categories may be compared

to or contrasted with other categories or groups of categories, thereby providing a significance test for the two sub-hypotheses (H_{1a}, H_{1b}).

Four different partitioning combinations of interaction categories providing significance tests of categories in various comparisons were performed. The first was a general comparison of positive versus negative categories, beginning with positive social-emotional interaction compared to positive task-related interaction, and finally contrasted with negative social-emotional interaction. The second was a general comparison of social-emotional versus task-related interactions. It first compares positive social-emotional categories, contrasts them with negative social-emotional interaction, and continues the procedure through the task-related categories. The third generally contrasts the paired social-emotional categories with the paired task-related categories. The fourth procedure reversed contrasts and paired task-related categories with the paired social-emotional categories.

Hypothesis 1_a predicted a higher proportion of positive social-emotional responses (categories 1, 2, and 3) among consensus groups than among impasse groups. Categories 2 and 3 differed significantly ($\chi^2 = 4.15 - 39.33$, $df = 1$, $p < .05 - .001$) in all combinations of comparisons. Category 1 differed significantly when combined with category 2 against all other categories ($\chi^2 = 7.34$, $df = 1$, $p < .01$), but no other significance was reported in the other two contrasts.

Hypothesis $_{1b}$ predicted a higher proportion of negative social-emotional responses (categories 10, 11, and 12) among impasse groups than among consensus groups. Significant differences were found

in all combinations of comparisons for all three categories (χ^2 = 43.31 - 91.99, df = 1, p .001). The results of the orthogonal contrasts of negative and positive social-emotional interaction between the two independent groups support hypotheses 1_a and 1_b.

Consistent with Bales' studies, the results reveal no consistent differences among the task-related categories, especially among the "request" categories (7, 8, and 9). Some significant differences appeared among the "answers" categories (4, 5, and 6), but the differences fluctuated widely with the comparisons.

The chi-square tests reported above established that bargaining groups reaching consensus differed significantly from those failing to reach agreement, but the computations do not reveal whether the differences were in the predicted directions. Table 1, however, illustrates that the differences are in the direction predicted by the subhypotheses (H_{1a} and H_{1b})--there is a higher proportion of positive social-emotional interaction among consensus groups and a higher proportion of negative social-emotional interaction among impasse groups. The first hypothesis (H_1) and the two sub-hypotheses (H_{1a} and H_{1b}) were therefore supported by the data.

The second general hypothesis (H_2) predicted that discernible phases (orientation, evaluation, control) would emerge from time segments within bargaining sessions, and that these phases would be more definite among groups that reached consensus than among groups that failed to reach agreement.

This general hypothesis was operationalized by the five sub-hypotheses (H_{2a-e}). Both the hypotheses and the procedures for testing them were derived from the classic Bales and Strodtbeck study (1951)

of predictable phases in problem-solving.

The procedure required that each of the ten bargaining sessions be examined separately to determine the extent to which it deviated from the hypothesized phase movement. The number of transpositions required in each case to convert the actual movement to the hypothesized movement was calculated in accordance with the method suggested by Bales and Strodtbeck (1951). These calculations are shown in Table 3.

"Table 3 about here"

The type of interaction designated in Table 3 (orientation, evaluation, control, positive, negative) represents the phase movement hypothesized by each of the sub-hypotheses (H_{2a-e}). The hypothesized movement, identified as H (high), M (medium), L (low), is determined by frequency counts of specified interaction categories in each of three equal time segments. Actual phase movement and the number of transpositions required to convert it to the hypothesized movement are recorded in the rows following each meeting. Any meeting requiring three or fewer transpositions conforms significantly ($\alpha = .05$) to the hypothesized phase movement. (Calculations performed by Bales using Kendall's rank correlation coefficient illustrate the statistical validity of this procedure.) The same calculations for columns representing each of the phase movements permit a maximum of six total tranpositions per column to indicate significant congruence ($\alpha = .05$) to the hypothesized phase movements.

Table 3 reveals that none of the ten bargaining sessions conformed significantly to the predicted phase sequences, nor did any of the five hypothesized phase movements emerge at an acceptable level of

significance. The frequencies of specified interaction categories distributed across time segments do not provide support for any of the five sub-hypotheses (H_{2a-e}).

Bales and Strodtbeck (1951) have also developed a method which permits a simple calculation to determine whether a group of meetings, taken as a whole, conformed to the predicted phase movement. This procedure, which utilizes the number of transpositions calculated in Table 3 in a transformation to chi-square values, provides a statistical test of significance for the general prediction that phase sequences would emerge across time segments of bargaining sessions.

The derived chi-square value is not significant ($\chi^2 = 14.74$, $df = 20$, $p > .05$), thus the hypothesis that the distribution of phase sequences is random was not supported.

It was further hypothesized (H_2) that the predicted orientation evaluation, and control phases would be stronger among sessions that reached consensus than among sessions that reached impasse. While the predicted phase sequences did not develop among either group, the impasse meetings--contrary to expectations--conformed more closely to predicted phases than did meetings that reached consensus (see Table 4). The hypothesis was therefore not supported by the data.

"Table 4 about here"

DISCUSSION

As the title suggests, this study sought an alternative methodological approach to research in collective bargaining. The first hypothesis was essentially a test of the validity of this approach. Confirmation of this hypothesis suggests that further utilization of this methodological approach to research in bargaining is warranted.

Traditional bargaining theory identifies cooperative and competitive behavior as dependent variables. This paper was critical of the operationalization of these variables by studies in which simulated games required players to choose between sharing payoffs with an opposing player (cooperation) or attempting to win the entire payoff (competition) because such research fails to acknowledge the role of communication interaction in bargaining and, therefore, ignores the essential nature of negotiations.

This study, utilizing small group communication theory instead of game theory as its methodological basis, designated communication interaction analysis as the dependent measure and operationalized cooperative and competitive behavior as independent variables, equating cooperation with consensus and competition with impasse. This procedure permits an examination of potential cause-effect relationships to determine the extent to which positive or negative communication influences eventual satisfactory or unsatisfactory resolution of conflict.

Bargaining theory assumes that parties in conflict define their relationship by the strategy they select--either cooperative or competitive. The relationship of bargaining parties is clearly revealed in retrospect by the decision outcome of their interation--whether consensus was reached or impasse was declared. Consensus in bargaining requires compromise, which is cooperative behavior. Failure to reach agreement indicates reluctance to compromise, reluctance to share the payoff--in short, impasse results from competitive behavior as defined by bargaining theorists.

This study asserted that negotiation outcomes can better be

predicted through a small group communication theory approach than through bargaining theory based upon the methodology of game theory. It further asserted that cooperative behavior is characterized by positive interaction while competitive behavior is characterized by negative interaction. These assertions were implied in the first hypothesis which tested the relationship between positive and negative interaction and negotiation outcomes.

Statistical support for the basic hypothesis confirms the validity of the theory underlying this study. There apparently is a relationship between the positive and negative levels of interaction among the negotiators and the outcome--whether consensus or impasse is reached. The results encourage the use of analysis of interaction elements and patterns to predict negotiated outcomes.

Interaction analysis can also provide insight into bargaining behavior through the use of descriptive analysis. Interact analysis--that is, the frequency with which each category of acts is followed by each of the other categories of acts--provides further insight into bargaining behavior. For example, determination of the extent to which positive responses are elicited by positive acts and negative responses by negative acts contains useful implications to the bargainer who is mindful of the relationship of positive interaction to consensus and negative interaction to impasse. Use of the Bales IPA permits extensive comparison of results to other studies, which is helpful in interpreting their significance and implications.

The second hypothesis, which predicted the evolution of interaction phases across bargaining sessions, was firmly rooted in both theory and research. Bales has synthesized many theories in his

explication of how and why groups progress through several distinct phases of problem-solving. The measurement of these phases through frequencies of interaction categories has been tested and affirmed by numerous studies conducted by Bales and his associates and other researchers.

There are several possible explanations (rival hypotheses) for the failure of these phases to emerge in this study. Groups that are not required to reach agreement may deliberately reach impasse; that is, impasse may have been a bargaining strategy. In this case, there would be no progress through the problem-solving phases. Although bargaining groups were defined as problem-solving groups, they may be unique as problem-solvers and do not progress through distinct phases. Most probably, however, bargaining--unlike most problem-solving groups used in experimental studies--is not resolved during a single meeting. It typically extends across a series of several meetings, often spanning several months. Phases may emerge across a series of sessions, but not during single, isolated sessions such as were used in this study.

The decision to analyze single, isolated sessions instead of entire series of bargaining sessions was necessitated by a combination of selection criteria and time limitations resulting from the lack of control in a field setting.

Productiveness of meetings--whether agreement was reached, no decision was made, or impasse was declared or implied--was identified as a selection criterion. Lack of control by the researcher in a field setting was fully realized when all bargaining groups recorded during a three year period declared impasse, leaving no consensus

groups by which to manipulate the independent variable. Additionally, audibility of tapes as a selection criterion eliminated eleven of the available tapes, leaving no complete series of meetings for analysis.

Because most groups did reach agreement on some items during the negotiation process prior to finally declaring impasse on unresolvable items, it was decided to confine analysis to single sessions in which decisions (either consensus or impasse) were reached. While this procedure permitted examination of the stated hypotheses, it likely resulted in the failure to confirm the phasic progression. Most of the selected sessions occurred near the end of the series of meetings. The orientation phase of problem-solving was likely eliminated by the selection criteria.

CONCLUSIONS

The major conclusion to be drawn from this study is that positive and negative social-emotional interaction varied significantly depending upon whether the meeting terminated in agreement or in lack of agreement. Interaction among bargaining groups that reached consensus was characteristically positive; interaction among bargaining groups that failed to reach agreement was characteristically negative.

While the predicated phase movement was not confirmed, a descriptive analysis revealed that impasse groups engaged in comparatively more opinion interaction and less information exchange than consensus groups, and this pattern of interaction progressively increased toward the end of the meeting when impasse was declared. However, this study can make no conclusions about phase movements in bargaining; it can only recommend that they be observed across entire series

of bargaining sessions.

This study was in several aspects exploratory. Not only was it conducted as a field study in which no time limits were imposed on decision-making, but it uniquely analyzed the failure to reach a decision at all. Previous research in small group decision-making or problem-solving has virtually ignored the possibility of failure by a group to reach a decision. Lack of agreement was treated in the study as an independent variable rather than as a dependent measure. The results suggest not only that the approach is valid, but that it potentially provides valuable insights into the bargaining process.

The basic assumption underlying this study is that collective bargaining is essentially communication behavior. Communication interaction was therefore observed, quantified, and analyzed as the dependent variable, just as bargaining theory treated cooperative and competitive bargaining behavior. Using the methodology of small group problem-solving theoretically grounded in a systems approach to communication within small groups, this investigation sought an alternative approach to the analysis of bargaining strategy and the prediction of negotiation results.

Significant and consistent differences between the interaction of groups that reach agreement and those that fail to reach agreement suggest that negotiated outcomes are influenced by the type of communication interaction used by the bargainers. Communication interaction apparently can be used as an index of cooperative or competitive behavior in conducting bargaining research. The results appear to affirm the theoretical rationale and justify the methodological ap-

proach utilized by this investigation for future research that attempts to predict or explain bargaining behavior.

REFERENCES

BALES, R. F. Interaction process analysis: a method for the study of small groups. Cambridge, Mass.: Addison-Wesley Publishing Company, Inc., 1950.

BALES, R. F. How people interact in conference. Scientific American, 1955, 192, 31-35.

BALES, R. F. The equilibrium problem in small groups. In Small groups: studies in social interaction. A. P. Hare, E. F. Borgatta, and R. F. Bales. New York: Alfred A. Knopf, 1966, 444-476.

BALES, R. F. Personality and Interpersonal Behavior. New York: Holt, Rinehart, and Winston, 1970.

BALES, R. F. and P. A. HARE. Diagnostic Use of the Interaction Profile. Journal of Social Psychology, 1965, 67, 239-258.

BALES, R. F. and F. L. STRODTBECK. Phases in Group Problem-Solving. Journal of Abnormal and Social Psychology, 1951, 46, 485-495. Also in Group Dynamics: Research and Theory. Eds. D. Cartwright and A. Zander. New York: Harper and Row, 1968, 389-398.

BARTOS, O. J. Determinants and Consequences of Toughness. In The Structure of Conflict. Ed. P. Swingle. New York: Academic Press, 1970, 45-68.

BARTOS, O. J. How Preditable are Negotiations? Journal of Conflict Resolution, 1967, 11, 481-496.

BLAKE, R. R., J. S. MOUTON and B. FRUCHTER. The Consistency of of Interpersonal Behavior Judgments Made on the Basis of Short-

Term Interaction in Three-Man Groups. Journal of Abnormal and Social Psychology, 1954, 49, 573-578.

BLIESE, N. The Effect of Communication vs. No Communication in Two Types of Games of Strategy. Unpublished paper delivered at Annual Convention of Speech Communication Association, San Francisco, December, 1971.

BORGATTA, E. F. and R. F. BALES. The Consistency of Subject Behavior and the Reliability of Scoring in Interaction Process Analysis. American Sociological Review, 1953, 18, 566-569.

BOWER, J. L. Group Decision Making: A Report of an Experimental Study. Behavioral Science, 1965, 10, 277-289.

BRESNAHAN, J. L. and M. M. SHAPIRO. A Gentle Equation and Technique for the Exact Partitioning of Chi-Square Contingency Tables. Psychological Bulletin, 1966, 66, 252-262.

CLEVENGER, T., Jr. Research Methodologies in Speech-Communication. In Conceptual Frontiers in Speech Communication. Eds. R. J. Kibler and L. L. Barker. New York: Speech Association of America, 1969, 144-165.

COSER, L. A. The Functions of Social Conflict. New York: The Free Press, 1956.

COSER, L. A. Continuities in the Study Social Conflict. New York: The Free Press, 1967.

DANIELS, V. Communication, Incentive, and Structural Variables in Interpersonal Exchange and Negotiation. Journal of Experimental Social Psychology, 1967, 3, 47-74.

DEUTSCH, M. Trust and Suspicion. Journal of Conflict Resolution,

1958, 2, 256-279.

DEUTSCH, M. The Effect of Motivational Orientation Upon Trust and Suspicion. Human Relations, 1960, 13, 123-139.

DEUTSCH, M. The Effects of Cooperation and Competition upon Group Process. In Group Dynamics: Research and Theory. Eds. D. Cartwright and A. Zander. New York: Harper and Row, 1968, 461-482.

DEUTSCH, M. and R. M. KRAUSS. Studies of Interpersonal Bargaining. Journal of Conflict Resolution, 1962, 6, 52-76.

DORRIS, J. W. Reactions to Unconditional Cooperation: A Field Study Emphasizing Variables Neglected in Laboratory Research. Journal of Personality and Social Psychology, 1972, 22, 387-397.

ELLIS, D. An Analysis of the Differential Effects of Various Types and Degrees of Communication Opportunity on Conflict Between Groups. Dissertation, Purdue University, 1965.

ELLIS, D. and B. A. FISHER. Phases of Conflict in Small Group Development: A Markov Analysis. Human Communication Research, 1975, 1, 195-212.

EVANS, G. Effect of Unilateral Promise and Value of Rewards Upon Cooperation and Trust. Journal of Abnormal and Social Psychology, 1964, 69, 587-590.

FISHER, B. Aubrey. Decision Emergence: Phases in Group Decision-Making. Speech Monographs, 1970, 37, 53-66.

FISHER, B. A. and L. C. HAWES. An Interact System Model: Generating a Grounded Theory of Small Groups. Quarterly Journal of Speech, 1971, 57, 444-453.

FRIEDRICH, G. W. Partitioning of Contingency Tables. Unpublished manuscript. Fall, 1967.

GAHAGAN, J. P. and J. T. TEDESCHI. Strategy and the Credibility of Promises in the Prisoner's Dilemma Game. Journal of Conflict Resolution, 1968, 12, 224-234.

HARE, A. P.. Handbook of Small Group Research. New York: The Free Press, 1962.

HAWES, L. C. and D. H. SMITH. A Critique of Assumptions Underlying the Study of Communication in Conflict. Quarterly Journal of Speech, 1973, 59, 423-437.

HORAI, J. and J. T. TEDESCHI. Effects of Credibility and Magnitude of Punishment on Compliance to Threats. Journal of Personality and Social Psychology, 1969, 12, 164-169.

JANDT, F. E. Conflict Resolution Through Communication. New York: Harper and Row, 1973.

JOHNSON, D. W. Communication and the Inducement of Cooperative Behavior in Conflicts: A Critical Review. Speech Monographs, 1974, 54, 64-78.

KATZ, D. Field Studies. In Research Methods in the Behavioral Sciences. Eds. L. Festinger and D. Katz. New York: Holt, Rinehart, and Winston, 1953, 56-97.

KERLINGER, F. N. Foundations of Behavioral Research. New York: Holt, Rinehart, and Winston, 1965.

KRAUSS, R. M. and M. DEUTSCH. Communication in Interpersonal Bargaining. Journal of Personality and Social Psychology, 1966, 4, 572-577.

LANDSBERGER, H. A. Interaction Process Analysis of the Mediation

Labor-Management Disputes. Journal of Abnormal and Social Psychology, 1955, 51, 552-558.

LOOMIS, J. L. Communication, the Development of Trust, and Cooperative Behavior. Human Relations, 1959, 12, 305-315.

MACK, R. W. and R. C. SNYDER. The Analysis of Social Conflict--Toward an Overview and Synthesis. Journal of Conflict Resolution, 1957, 2, 212-248.

McGRATH, J. E. A Social Psychological Approach to the Study of Negotiations. In Studies on Behavior in Organizations. Ed. R. V. Bowers. Athens, Georgia: University of Georgia Press, 1966, 101-134.

PATCHEN, M. Models of Cooperation and Conflict: A Critical Review. Journal of Conflict Resolution, 1970, 4, 389-407.

PILISUK, M., J. A. WINTER, R. CHAPMAN, and N. HAAS. Honesty, Deceit, and Timing in the Display of Intentions. Behavioral Science, 1967, 12, 205-215.

RADLOW, R. and M. F. WEIDNER. Unenforced Commitments in 'Cooperative' and 'Noncooperative' Non-Constant-Sum Games. Journal of Conflict Resolution, 1966, 10, 497-505.

RAPOPORT, H. Fights, Games, and Debates. Ann Arbor, Michigan: University of Michigan Press, 1960.

REDDING, W. C. Research Setting: Field Studies. In Methods of Research in Communication. Eds. P. Emmert and W. D. Brooks. New York: Houghton Mifflin Co., 1970, 105-159.

SCHELLING, T. C. The Strategy of Conflict. Cambridge, Mass.: Harvard University Press, 1963.

SHERIF, M., O. J. HARVEY, J. J. WHITE, W. R. HOOD, and C. W. SHERIF. Intergroup Group Conflict and Cooperation: The Robber's Cave Experiment. Norman, Oklahoma: University Book Exchange, 1961.

SHURE, G. H., R. J. MEEKER, and E. A. HANSFORD. The Effectiveness of Pacifist Strategies in Bargaining Games. Journal of Conflict Resolution, 1965, 9, 106-117.

SIEGEL, S. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Co., 1956.

SIMMEL, G. Conflict. Trans. K. H. Wolff. New York: The Free Press, 1955.

SMITH, D. H. An Experimental Study of Communication Restriction and Knowledge of the Opponent's Minimum Disposition as Variables Influencing Negotiation Outcome. Dissertation, Ohio State University, 1966.

SMITH, D. H. Communication and Negotiation. In Communication Spectrum. Ed. L. Thayer. Proceedings, 15th Annual Conference, International Communication Association, 1969, 52-63.

SWENSSON, R. G. Cooperation in the Prisoner's Dilemma Game I: The Effects of Asymmetric Payoff Information and Explicit Communication. Behavioral Science, 1967, 12, 314-322.

SWINGLE, P. G. and A. SANTI. Communication in Non-Zero-Sum Games. Journal of Personality and Social Psychology. 1972, 23, 54-63.

TERHUNE, K. W. Motives, Situation, and Interpersonal Conflict Within Prisoner's Dilemma. Journal of Personality and Social Psychology, Monograph Supplement, 1968, 9.

TUCKMAN, B. W. Development Sequence in Small Groups. Psychological Bulletin, 1965, 63, 384-399.

VROOM, V. H., L. D. GRANT, and T. S. COTTON. The Consequences of Social Interaction in Group Problem-Solving. Organizational Behavior and Human Performance, 1969, 4, 77-95.

WALLACE, D. and P. ROTHAUS. Communication, Group Loyalty, and Trust in PD Games. Journal of Conflict Resolution, 1969, 13, 370-380.

WALTON, R. E. and R. B. McKERSIE. A Behavioral Theory of Labor Negotiations. New York: McGraw-Hill Book Co., 1965.

WICHMAN, H. Effects of Isolation and Communication on Cooperation in a Two-Person Game. Journal of Personality and Social Psychology, 1970, 16, 114-120.

WOOD, M. T. Power Relationships and Group Decision-Making in Organizations. Psychological Bulletin, 1973, 779, 280-293.

NOTE

[1] For detailed explanation of Bales' category system, see Bales (1950 & 1970). For further information regarding the source of hypotheses, see Bales (1966, p 447) for Hypothesis 1 and Bales and Strodtbeck (1968, p 392) for Hypothesis 2.

Table 1

Interaction Percentages

	Consensus	Impasse	Total
1. Seems Friendly	2.67	1.68	2.34
2. Dramatizes	5.94	0.36	4.09
3. Agrees	9.62	5.04	8.10
4. Gives Suggestion	6.53	5.04	6.04
5. Gives Opinion	23.57	30.70	25.93
6. Gives Information	33.25	27.22	31.25
7. Asks for Information	10.57	7.79	9.65
8. Asks for Opinion	4.10	3.48	3.89
9. Asks for Suggestion	0.59	0.84	0.68
10. Disagrees	2.43	8.87	4.57
11. Shows Tension	0.53	4.08	1.71
12. Seems Unfriendly	0.18	4.92	1.75

Table 2

Chi-Square of Interaction Differences

	Consensus			Impasse			Total
	Frequencies			Frequencies			Total
Category	Observed	Expected	χ^2	Observed	Expected	χ^2	Observed
1	45	39.46	.78	14	19.54	1.57	59
2	100	68.88	14.06	3	34.12	28.38	103
3	162	136.43	4.79	42	67.57	9.68	204
4	110	101.66	.68	42	50.34	1.38	152
5	397	436.72	3.61	256	216.28	7.29	653
6	560	526.33	2.15	227	260.67	4.35	787
7	178	162.51	1.48	65	80.49	2.98	243
8	69	65.54	.18	29	32.46	.37	98
9	10	11.37	.17	7	5.63	.33	17
10	41	76.91	16.77	74	38.09	33.85	115
11	9	28.76	13.58	34	14.24	27.42	43
12	3	29.43	23.74	41	14.57	27.94	44
Total	1684	1684.00	81.99	834	834.00	165.54	2518
				χ^2 =	247.53		

Table 3

Phase Movement Transpositions

Bargaining Session	Phase Movement	Type of Interaction: Orientation	Evaluation	Control	Positive	Negative	Total Number Transpositions
	Hypothesized Movement	HML	LHM	LMH	LMH	LMH	
Consensus Case #1	Actual Movement	HLM	MHL	MHL	LMH	MHL	
	Transpositions	1	3	2	0	2	8
Consensus Case #2	Actual Movement	LMH	MHL	MHL	HLM	LMH	
	Transpositions	3	3	2	2	0	10
Consensus Case #3	Actual Movement	MHL	HLM	MLH	-L-	LMH	
	Transpositions	1	1	1	1½	0	4½
Consensus Case #4	Actual Movement	LMH	HML	L--	LHM	HLM	
	Transpositions	3	2	½	1	2	8½
Consensus Case #5	Actual Movement	LMH	HML	LHM	LMH	HML	
	Transpositions	3	2	1	0	3	9
Impasse Case #1	Actual Movement	MHL	MLH	H--	HLM	MHL	
	Transpositions	1	2	2½	2	2	9½
Impasse Case #2	Actual Movement	HML	LMH	-H-	MLH	MHL	
	Transpositions	0	1	1½	1	2	5½
Impasse Case #3	Actual Movement	HML	LMH	MHL	HML	LMH	
	Transpositions	0	1	2	3	0	6
Impasse Case #4	Actual Movement	-H-	MHL	LMH	-H-	MLH	
	Transpositions	1½	3	0	1½	1	7
Impasse Case #5	Actual Movement	MHL	LMH	--H	MLH	-H-	
	Transpositions	1	1	½	1	1½	5
	Total	14½	19	13	13	13½	73

H=high; M=medium; L=low. Results not reported represent tied frequency counts; ties were counted as ½ transposition (results expected by chance) but were rounded to the next highest number for use in tests using combined data for all meetings.

Table 4

Chi-Square of Phase Differences

	Number of Meetings	Average Transpositions	χ^2	χ^2 p = .05
Consensus	5	8	5.19	18.31
Impasse	5	6.6	9.55	18.31